PPI Program Spotlight

U.S. Department of Labor
Bureau of Labor Statistics

Producer Price Index Data for SIC 3312, Blast Furnaces and Steel Mills

This publication provides an overview of the specific methods used and problems faced by the Bureau of Labor Statistics (BLS) while compiling the Producer Price Index (PPI) for the output of Standard Industrial Classification (SIC) 3312, Blast Furnaces and Steel Mills. It is intended to be used in conjunction with the PPI Program Spotlight titled, "Producer Price Index Data for the Outputs of Industries" (BLS No. 98-2).

Industry definition

SIC 3312 is comprised of establishments primarily engaged in the manufacture of hot metal, pig iron, and silver pig iron from iron ore and iron and steel scrap. More often than not, these products are further processed to form carbon and stainless-steel shapes such as sheet, strip, bar, rod, and wire. The manufacture of coke and coal-tar crudes produced through beehive chemical recovery-type ovens are also included in this SIC. A series of other industries produce similar output processed from purchased SIC 3312 semi-finished materials (e.g., ingot; billet). These related SICs include: SIC 3315, Steel Wire and Related Products; SIC 3316, Cold Finishing of Steel Shapes; and SIC 3317, Steel Pipe and Tubes. These industries do not maintain furnaces of their own. Rather, establishments in these industries employ techniques such as rolling, drawing, extruding, piercing, finishing, and heat-treating. The distinguishing characteristic of a SIC 3312 establishment is the presence of an electric-arc or blast furnace.

Because SICs 3315, 3316, and 3317 manufacture products similar to those manufactured by SIC 3312 establishments using purchased SIC 3312 steel ingots and semi-finished materials, there is much similarity in the indexes published for these industries. For example, price indexes for steel wire; cold-rolled sheet, strip, and bar; and steel pipe and tube exist within both SIC 3312 and the related SICs. Here, individual industry-based PPIs may fail to completely describe change in price for specific commodities. As a result, data users with a product, rather than industry orientation, often use the commodity-based PPI publication structure.[1] That structure combines individual industry price indexes into "wherever made" indexes. For example, the PPI commodity index for steel wire (code 101705) combines industry-based codes 3312-5 and 3315-5.

Price indexes available

For those looking to assemble a comprehensive statistical picture of SIC 3312, industry-based PPIs prove useful.[2] The SIC 3312 product classes for which PPIs are published are shown in table A. For this industry, the net value of shipments is equal to 94.33 percent of the gross value of shipments. Net value-of-shipments is defined as revenue earned by establishments within an industry from sales to customers outside their industry.

Sampling methods

SIC 3312 has been sampled three times since PPI converted to its current industry-based sampling methodology. The first sample (cycle A) lasted from June of 1982 through December of 1989. Cycle B ran from December of 1989 through June of 1997. Cycle C was introduced in June of 1997. For comparison, the mean PPI sample runs about 7.5 years. For the current sample, PPI attempted initiation for 80 establishments. The sampling universe contained 502 establishments eligible for selection, and was organized by employment size. This followed an attempt to initiate 85 establishments during cycle B. For comparison, the mean PPI sample allocation for a manufacturing industry is 75 establishments.

During cycle B, 87.7 percent of those establishments sampled were willing to provide data; 78.5 percent were assigned to SIC 3312, and 9.2 percent were found to be misclassified and, therefore, subsequently assigned to one of the earlier-mentioned related SICs. Given the close relation between SICs 3312, 3315, 3316, and 3317, this high level of misclassification at sampling was expected. PPI-wide, 85 percent of establishments cooperate when approached. During cycle B, 20 percent of SIC 3312 respondents who agreed to participate in the survey subsequently

NO. 98-6
BUREAU OF LABOR STATISTICS

2 MASS. AVE. NE,
WASHINGTON, D.C.
20212
ROOM 3840

(202) 606-7705
http://stats.bls.gov

Spotlight

Table A. PPI publication structure for SIC 3312

Industry/ product code	Industry and product	Index start date	Value of shipments* ($1,000's)	Percent distribution
3312	Blast furnaces and steel mills	1/65	42,203,500	100.0
3312-P	Primary products	6/82	41,084,100	97.3
3312-1	Coke oven and blast furnace products	1/65	1,737,000	4.1
3312-2	Steel ingots and semi-finished shapes and forms	1/65	3,656,400	8.7
3312-3	Hot-rolled sheet and strip	1/65	16,580,900	39.3
3312-4	Hot-rolled bars, shapes, and structural shapes	1/65	9,709,400	23.0
3312-5	Steel wire	1/65	348,400	0.8
3312-6	Steel pipe and tubes	1/65	1,697,260	4.0
3312-7	Cold-rolled sheet and strip	1/65	6,138,000	14.5
3312-8	Cold-finished bars	1/65	655,040	1.6
3312-SM	Secondary products and miscellaneous receipts	6/82	1,119,400	2.7

*1992 Census of Manufactures, Bulletin No. MC-92-I, U.S. Department of Commerce

dropped out. Over the life of an industry sample, an average of 21 percent of reporters stop participating.

Due to concentration in this industry (half of shipments are produced by the top 20 establishments), and the proliferation of products produced, the PPI initiated a special technique for assigning individual price quotations to sampled establishments. Typically, four items within a cooperating establishment are selected for tracking, and, as a general rule, the number of items selected per establishment does not exceed eight. However, for SIC 3312, 20 price quotations per establishment were assigned to the top 3 producers, while 12 price quotations per establishment were assigned to the 4th through 20th largest producers. Six price quotations per establishment were assigned to the next 40 establishments, while 4 price quotations per establishment were assigned to the 20 smallest establishments in the sample. In all, 584 transactions were slated for initiation into the PPI. Of this number, 408 were successfully initiated.

Monthly price updates

Once specific products for tracking are selected, respondents are asked to update prices on a monthly basis. For SIC 3312, approximately 73 percent of the survey forms are returned in time for inclusion in the monthly first-published indexes. PPI-wide, this number stands at about 67 percent. After 4 months, all indexes are subject to a one-time revision, incorporating corrections and data received too late for inclusion in the first-published indexes. At the 4-month point, an average of 92 percent of sampled SIC 3312 transactions have been received. PPI-wide, this number stands at 85.5 percent. Over the course of a year, about 72.7 percent of these transactions reflect a change in price.

Although firms are asked to report their prices on a monthly basis, some respondents request to submit price data on a less-frequent schedule. Two percent of respondents provide data less than monthly, for SIC 3312. PPI-wide, this number stands at 10 percent.

In responding to the PPI survey on a monthly or less-frequent basis, reporters verify or note changes in the detailed item descriptions of the sampled product. The specifications that are most important in determining the price and quality of products of SIC 3312 are:

- metal type (e.g., carbon, alloy, stainless)
- product form (e.g., ingot, sheet, strip, plate, bar, rod)
- grade, dimension, weight, exactness of tolerance
- plating or coating, surface finish
- heat-treating

The inclusion of late-reported prices and corrections by respondents often cause the 4-month-ago revised indexes to differ from first-published indexes. The overall average absolute difference between first-published and final index values for SIC 3312 during cycle B (June 1989 though June 1997) was 0.2 index points, in this case equaling roughly 0.2 percent. For comparison, the average absolute value of the 12-month percent change for this industry during cycle B was 3 percent.

Problems in constructing price indexes

Quality adjustment. A critical challenge in processing prices reported by respondents is to capture the true price change for an item, excluding changes in product quality. If an individual transaction has changed, respondents are asked to make note of the modification. When an item is no longer available, respondents are asked to substitute a similar item. For SIC 3312, three percent of items experience some type of substitution or modification during the course of a year. PPI-wide, this number stands at 4 percent. Typically, quality changes for SIC 3312 focus on changes in the unit of sale (e.g., price quotes per ton becoming price quotes per 100-pound increment). Occasionally, product descriptors such as dimension (e.g., a particular plate or rod thickness may no longer be manufactured), or alloy content (e.g., a particular alloy-defined type of stainless steel may be replaced by an improved alloy mixture) may change.

Transaction price collection. To accurately estimate inflation at the producer level, PPI needs respondents to report net transaction prices (i.e., actual revenue received) for the sale of the sampled output. Pricing behavior within SIC 3312 at one time made this a challenging requirement. Most firms in this industry maintain a bound listing of all their products, prices, and surcharges. However, these prices, referred to as "book prices" within the industry, often do not reflect actual revenue received. This is particularly true for flat-rolled carbon-steel products. Surcharges often occur, as well; particularly for steel-alloy and stainless-steel products. Producers in these areas are sensitive to increasing prices for nickel, chromium, cobalt, and similar metals. Dramatic price change for these inputs, when prolonged, tends to be passed on to purchasers. Producers may also apply a surcharge, if the price of carbon-steel scrap increases dramatically or for a prolonged period.

During the PPI's first attempt (cycle A) to collect data for SIC 3312, many respondents agreed only to provide "book prices," particularly in the flat-rolled carbon-steel products area. This deficiency resulted in a well-documented situation where, for a significant portion of SIC 3312, PPIs failed to reflect the universe of pricing activity within the industry.[3] From 1982 through 1985, the SIC 3312 index incorrectly stood at a level above where it should. This was due to the fact that producers were selling product at far-below book price. Then, in 1986, most producers reversed pricing strategy; reducing book prices over 4.0 percent, while at the same time increasing net transaction prices. This policy was publicly documented prior to its application. The PPI for SIC 3312 failed to respond accordingly. When re-sampling establishments for the second and third cycles, BLS strongly emphasized to respondents the need for net transaction price data. Cooperation was wide-spread. Since blast-furnace and steel-mill-product indexes are widely used in contract escalation, most producers, previously only willing to provide book prices, were now quite interested in providing data that reflected actual revenue received. Only one establishment limited its cooperation to book-price data and was precluded from participating in the survey.

While many respondents provide net price data based on actual transactions, some respondents provide net prices based on average-price calculations. For average prices to be useful to the PPI, they must be calculated for a narrowly specified band of production and reflect a net price. For example, an average price for "all carbon sheet" would prove of little value. Whereas, an average price based on "all hot-rolled carbon steel sheet sold to the automotive industry" would prove more valuable. PPI-wide, an estimated 80 percent of respondents provide data that reflect actual revenue received. SIC 3312 now roughly falls in line with this average. Half the items collected in cycle B reflected actual shipment prices, while another quarter reflected average net prices. For product lines where book prices reflected actual revenue received, list prices were accepted. However, only 20 percent of the item prices collected are list.

Additional information

Telephone. For questions regarding PPI data, contact the Section of Index Analysis and Public Information of BLS at (202) 606-7705.

Internet ***(http://stats.bls.gov/ppihome.htm).*** This World Wide Web (WWW) site offers current index data available, as well as historical series and news releases. For more information about accessing the PPI home page, see Program Spotlight No. 98-4, "Producer Price Index Data via the Internet."

---

[1] For a full accounting of the PPI commodity-based publication structure, see "Producer price indexes and percent changes for commodity groupings and individual items," *PPI Detailed Report.* Within this table, the indexes for commodity group 1017 are constructed with much of the data in SICs 3312, 3315, 3316, and 3317.

[2] For a full accounting of the PPI industry-based publication structure, see **"**Producer price indexes for the net output of selected industries and their products, not seasonally adjusted," *PPI Detailed Report.*

[3] For a full accounting of the influence of list prices on SIC 3312 from 1982 through 1989, see Betsock and Gerduk. 1992. "The Problem of List Prices in the Producer Price Index: The Steel Mill Products Case," *Price Measurements and Their Uses.* Studies in Income and Wealth. Volume 57. (Chicago and London: The University of Chicago Press.)